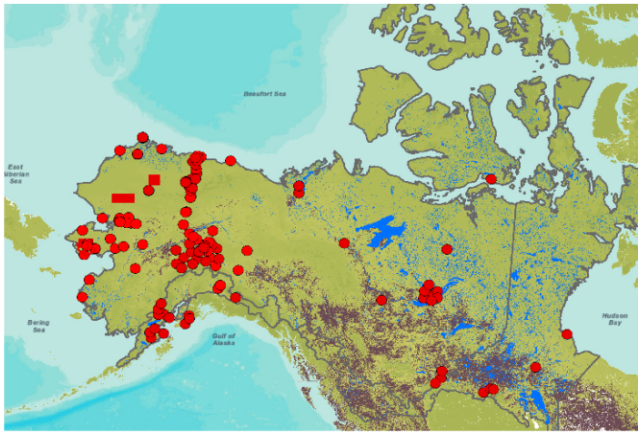
ABoVE Hydrology & Permafrost Working Group (HPWG)

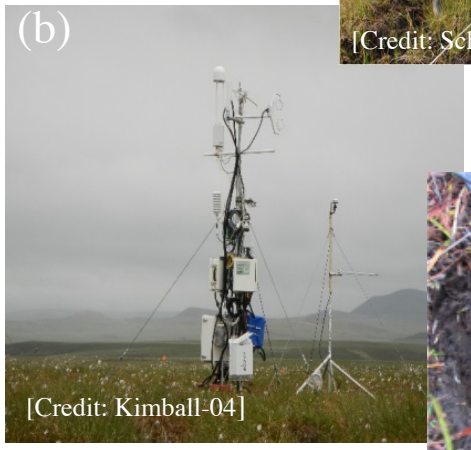
J. Kimball (Chair), L. Bourgeau-Chavez, M. Carroll, C. Derksen, B. Ebel, J. Gamon, S. Goetz, P. Griffith, E. Jafarov, Liza Jenkins, T. Jorgenson, P. Kirchner, M. Lara, P. Marsh, D. McLennan, F. Myer, C. Miller, B. Minsley, M. Moghaddam, D. Nicolsky, W. Oechel, N. Pastick, J. Rose, J. Rover, K. Schaefer, O. Sonnentag, M. Walvoord, J. Watts, M. Whitley, S. Wullschleger, Y. Zhang

HPWG Objectives: Address NASA key elements quantifying linkages, drivers & patterns of change in surface *non-frozen period*, permafrost *active layer conditions*, *snow cover, surface & sub-surface hydrology*. Assess effects on vegetation greening/ browning, carbon exchange, animal habitat, ecosystem services & community resilience

Participation: 31 members & more than 12 science projects represented; university, international & multi-agency collaborators



Left: Locations of HPWG field activities for ABoVE Phase 1 (2016-2018). **Right**: (**a**) measuring active layer depth; (**b**) tundra flux tower; (**c**) soil moisture & temperature sensor installation.



Field Activities (2016): Critical data collected on surface/atmosphere water & energy exchange, permafrost active layer properties, soil moisture & temperature, vegetation growth, soils, surface & groundwater hydrology

Airborne Campaign Prep: Coordinating project & stakeholder efforts to identify key sites & data needs for NASA 2017 airborne campaigns, including AirMOSS/UAVSAR, G-LiHT, LVIS & PRISM sensor data

RS Cal/Val Assessments: Permafrost active layer properties & fire/thermokarst disturbance

Accomplishments: ~12 peer-reviewed ABoVE publications (2015/16) from HPWG members; new science data products delivered incl. satellite based lake & inundation dynamics maps, radar derived active layer maps

Outreach: Science education & ABoVE outreach in remote AK communities (partnership with ARCUS & USGS)